

Is Vigilance Related to Group Size in Homo sapiens?

by Jeffrey H. Simonson 1995

Humans occasionally perform visual scans of their surroundings while feeding. We observed rates of scanning in groups of Homo sapiens while they ate in cafeterias. We found no correlation between vigilance and group size. Females, though, are less vigilant than males for group sizes of 2-6.

Introduction

While engaged in normal activities, animals may occasionally visually scan their surroundings. This might occur in prey species when they scan for predators. Because there are more scanners, individuals may be less vigilant in large groups. Conversely, individuals in small groups may be more vigilant. Humans (*Homo sapiens*) are a prey species, and they too perform this scanning behaviour while eating.

Wirtz and Wawra (1986) showed the rate of scanning in *H. sapiens* is negatively correlated with group size. In other words, humans are less vigilant in large groups and more vigilant in small groups. We show here a lack of this correlation. In addition we show females generally tend to scan less than males.

Methods

We observed students in two cafeterias at the University of Alaska Fairbanks. We made both focal and scanning observations. Focal observations concentrated on one individual at a table. During each 5 minute observation, we simply counted the number of times the individual looked away from the table (a scan event). We recorded the sex of each individual at the table and the group size. We observed a total of 144 females and 177 males in groups of sizes 1-5.

Scan observations involved recording individuals' behaviour (looking up or not) at the instance of the observation. Again, we recorded the sex of each individual at the table and the group size. We observed a total of 427 females and 372 males in groups of sizes 1-8.

Results

Figure 1 shows our focal observation data for males and females along with data from Wirtz and Wawra. Our data show the same decreasing trend in scan events per minute (though at a lower absolute rate) as do Wirtz and Wawra. However, we show a reversal of this decreasing trend at group size 4. This accounts for some of the difference in our lower correlation coefficients between these two parameters and the correlation found by Wirtz and Wawra (Table 1).

Regarding the difference between males and females, our study showed the same general trend as Wirtz and Wawra. Our crossover, however, occurred between group sizes 1 and 2, rather than 2 and 3 (see Figure 1). This indicates females are generally less vigilant than males; they are certainly less vigilant for group sizes of 2-6. Only the focal observations (Figure 1) of group size 1, and scan observations (Figure 2) for group size 7, show a higher scan event rate for females.

Focal Observations

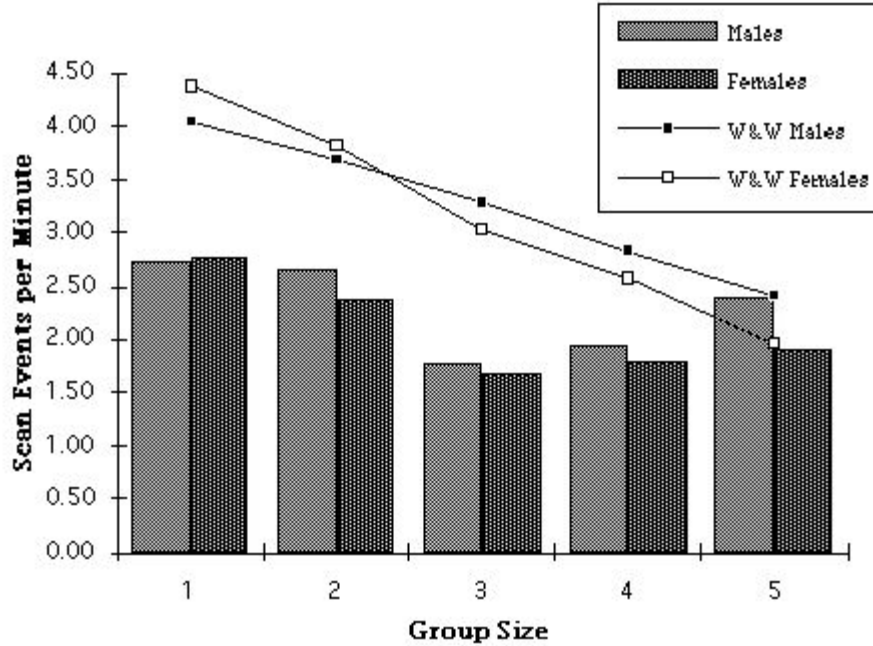


Figure 1. Focal observation of *Homo sapiens* eating in groups, shown by group size (number at table) versus scan events (when subject looks away) per minute. We collected data shown in the histogram bars at the University of Alaska Fairbanks. Data from Wirtz and Wawra (1986) is shown connected by line segments. Male and female legends indicate the sex of the observed individual. Our data shows little correlation between scan events and group size, while Wirtz and Wawra show good negative correlation (see Table 1). Both data sets show females generally scan more than males in small groups, and less than males in larger groups.

Sex	Correlation Coefficient	W&W Coefficient
Males	-0.506	-0.999
Females	-0.801	-0.997
Both	-0.640	-0.976

Table 1. Correlation coefficients of group size versus scan events (when subject looks up) per minute. Data is for males only, females only, and both males and females together. W&W coefficients (Wirtz and Wawra, 1986) show good negative correlation, while our data showed little correlation.

Scan observation data shown in Figure 2 also shows little correlation between group size and vigilance. The correlation coefficients in Table 2 are not significantly high. Furthermore, the signs are reversed for males and females.

Again, we found females were generally less vigilant than males. In a group of 7, however, the proportion of scanning females was higher than males. This is likely due to the small sample size (N=7); the sample size for a group of 8 is also small (N=2).

Figure 2. Male and female scan observations are shown as group size versus the proportion of individuals scanning. This data shows no correlation between group size and scanning. Except in a group size of 7, females scanned less than males.

Sex	Correlation Coefficient
Males	-0.570
Females	0.323
Both	-0.162

Table 2. Correlation coefficients of group size versus the proportion of individuals scanning. Data is for males only, females only, and both males and females together. The coefficients indicate no significant relation between group size and scanning.

Conclusion

Humans occasionally scan their environment while eating. This is presumably to check for hazards such as predation. Individuals in small groups may be more vigilant than individuals in larger groups. Wirtz and Wawra (1986) showed the rate of scanning in *H. sapiens* is negatively correlated with group size. They also found females spent less time scanning than males.

In contrast, we showed no correlation between group size and vigilance in *H. sapiens*. We found females are less vigilant than males for group sizes of 2-6 agreeing with Wirtz and Wawra.

Literature Cited

Wirtz P and M Wawra. 1986. Vigilance and group size in *Homo sapiens*. Ethology 71:283-286.